AMENDMENTS TO THE SPECIFICATION

Please amend the specification as indicated hereafter. It is believed that the following amendments and additions add no new matter to the present application.

In the Specification:

Please amend the paragraph starting on p. 1, line 5 as follows:

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation U.S. Utility Patent Application Ser. no. 10/102,992, filed March 21, 2002, now U.S. Patent No. 6,697,453 which claimed priority to U.S. provisional application Ser. no. 60/355,200, filed February 8, 2002.

Please amend the paragraph starting on p. 7, line 5 as follows:

The x-ray source controller 34 includes a power switch ~~34~~ 44 and voltage and current control knobs 46. The x-ray source controller ~~44~~ 34 is electrically coupled to the battery 16 via a power cord (not shown) that extends from the x-ray source controller 34 to a receptacle (not shown), which receives a power cord 52 that extends from the receptacle to the battery 16. The power-cord from the receptacle bifurcates such that the x-ray source controller 34 and the power inverter 42 are both in electrical communication with the battery 16. Extending from the x-ray source controller 34 to the backside of cable connectors 56 is a cable 54, which is typically a 12-wire bundle terminated with AMP CPC 17-16 type connector. The cable 54 is in electrical communication with an x-ray source (not shown) located in the scanning head 12 via cable 28A. The x-ray source controller 34 sends electrical power and control information to the x-ray source via cables 54 and 28A. The x-ray source controller 34 is configured, among other things, to initiate the operation of the x-ray source. Typically, initiation involves the x-ray source controller 34 regulating the electrical power delivered to the x-ray source such that the x-ray source is warmed up and brought to operation power in increments. In the preferred embodiment, the x-ray source controller 34 includes a plurality of LEDs that indicate whether the x-ray source controller 34 is in operation mode or warm-up mode.

Please amend the paragraph starting on p. 10, line 13 as follows:

The x-ray source 80 receives power and operating parameters from the x-ray source controller ~~36~~ 34 via cable 84, which extends from the x-ray source 80 to cable connectors 26, where cable 84 is in communication with cable 28A. The operating parameters from the x-ray source controller 34 include current and voltage settings for regulating the intensity and energy of the x-rays generated by the x-ray source 80. The x-ray source 80 also receives signals that put the x-ray source 80 in warm-up mode and in operating mode. The LED 24 receives electrical power from the x-ray source 80 via a pair of electrical wires 86.

Please amend the paragraph starting on p. 10, line 21 as follows:

In operation mode, the x-ray source 80 emits x-rays that are directed at the object 18 through a window 90 that is formed in the base 20. Disposed between the window 90 and the x-ray source 80 are a pair of collimating apertures 92 that collimate the x-ray beam 94. The x-ray beam 94 is incident upon object 18 where it is then reflected into the scanning head ~~120~~ 20.

Please amend the paragraph starting on p. 11, line 12 as follows:

In one preferred embodiment, the x-ray source 80, the collimating apertures 92, and the x-ray detector ~~94~~ 96 are removably coupled to the mounting plate 82 in a pre-defined alignment. For example, in the configuration illustrated in FIG. 2, the x-ray source 80 and collimating apertures 92 are aligned such that the angle between the x-ray beam 94 and a specific crystallographic plane of atoms in the object 18 is alpha. Similarly, the x-ray source detector 96 is aligned such that the angle between a portion of the detected reflected x-ray beam 98 and the specific crystallographic plane is also alpha. In one embodiment, the x-ray source 80 and the collimating apertures 92 and the x-ray detector 96 are each removably mounted to the mounting plate 82 by pins (not shown) extending into bores (not shown) formed in the mounting plate 82. The mounting plate 82 includes multiple bores for configuring the x-ray source 80, the collimating

apertures 92, and the x-ray detector 96 in other predefined alignments. For example, in a second configuration, the pins of the x-ray source 80 and the pins of the collimating aperture are received by bores 100 and 102, respectively. Similarly, bores 104 receive the pins of the x-ray detector 96. In the second configuration, the x-ray source 80 and the collimating apertures 92 are aligned such that the angle between the incident x-rays and the reflecting plane of atoms is beta, as is the angle between a portion of the detected diffracted x-rays 98 and the reflecting plane of atoms.

Please amend the paragraph starting on p. 17, line 12 as follows:

Refer now to FIG. 8, steps 800 are implemented by computer 40 to average the x-ray intensities for pixels having the same radial distance from the central axis 1005. In step 802 the computer determines three pixels that are equidistant the central axis 1005. The three pixels are chosen such that they are approximately in the bottom 1/3, the middle, and the top 1/3 of the dark vertical band 602. In the preferred embodiment, the x-ray detector ~~80~~ 96 is aligned such that the dark vertical band 602 is approximately vertical with respect to the horizontal pixels of the x-ray detector ~~80~~ 96, and the computer 40 calculates the approximate center of the dark vertical band 602 for horizontal arrays that are in the bottom 1/3, the middle, and the top 1/3 of the pixel grid. One method for finding the approximate center of the dark vertical band 602 for a horizontal pixel array is to associate each pixel of the horizontal array with an average intensity; where the average intensity is calculated from the intensity of that pixel and a predetermined number of horizontal neighbors. The average intensity will typically be greatest in the center of the dark band 602. Thus, for each of the three horizontal pixel arrays, the computer chooses the pixel that is associated with the greatest averaged intensity and determines the radial distance from the central axis 1005 to that chosen pixel.